

RGP-0072

**REMARKS**Amendment of independent claims 1, 11, and 62.

Independent claims 1, 11, and 62 have been amended. No new matter has been added with these amendments. Support for the amendments may be found in Applicant's Specification on page 6, paragraph 2. Entry of this amendment under 37 CFR 116 is respectfully requested on the grounds that it will resolve pending issues and/or will place the application in a better condition for the purposes of appeal.

New independent claim 90 has been added. Support for new independent claim 90 may be found in Applicants' Specification on page 5 and page 9. Entry of this amendment under 37 CFR 116 is respectfully requested.

Claims 7 and 14 were cancelled in the prior Response. Accordingly, claims 1-6, 8-13 and 15- 90 will be pending upon entry of this Response.

Reconsideration and allowance of the claims is respectfully requested in view of the foregoing amendments and/or following remarks.

Preliminary Matters.

The Undersigned would like to comment on several preliminary matters before addressing the substantive art rejection.

First, Applicants do not agree with the PTO's statement in Section III that the inventions of independent claims 1, 11, 17, 40, 61, 62, 63, 76, and 77 are not patentably different or distinct. In particular, the patentability of independent claims 11, 17, 40, 61, 62, 63, 76, and 77 does not stand or fall based on the patentability of independent claim 1. Although independent claim 1 may be the broadest claim, the other independent claims contain limitations that may not be ignored by the PTO. Limitations in claims distinguishing over the prior art cannot be ignored. *In re Boe et al.*, 184 U.S.P.Q. 38 (C.C.P.A. 1974).

Second, the Undersigned must respectfully but strongly disagree with the PTO's comments in section V. A and B of the Office Action of March 9, 2004, and July 9, 2004. The

RGP-0072

terms 'support', 'core', 'active area', 'composite', 'adhesion promoter', 'channel' and 'heat transfer area' are structural elements of all of the claimed inventions. That is, these terms are structural components of each of the following inventions, i.e., the apparatus of independent claims 1 and 17, the system of independent claim 11, the electrochemical cell components of independent claims 40, 61, 62, 63, and 77, and the method of independent claim 76.

As noted by the PTO, an applicant may recite features of an apparatus either structurally or functionally. However, the fact that a structural element may be preceded by a descriptive adjective such as 'electrical conductive', 'thermally conductive', or 'active' does not negate the fact that the recited element is a structural element that defines an apparatus, system or component. That is, the use of a descriptive adjective as part of a label for a structural element does not transform that structural element into a 'functional, characteristic, conditional, physical and/or chemical property'. The Undersigned respectfully requests support for any position to the contrary. It is noted that the caselaw relied upon by the PTO relates only to functional limitations and not to structural elements that have descriptive modifiers.

The Undersigned must also disagree with the PTO's position that the identification of an 'applied inherent property' automatically shifts the burden to an applicant to provide evidence. Rather, the PTO continues to have the burden to satisfy all of the elements of a *prima facie* case. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency. *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981). For example, that which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown. *In re Spormann*, 150 U.S.P.Q. 449, 452 (C.C.P.A. 1966). Finally, the Federal Circuit noted that "a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection." *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993).

Finally, the Undersigned respectfully requests clarification of Section VII of the Office Actions of March 9, 2004 and July 9, 2004. Removal of the final rejection is respectfully requested if additional prior art rejections were contemplated by the PTO on the basis of prior art references known to the PTO at the time that either Office Action was prepared. It is respectfully submitted that 'holding back' on additional prior art based rejections that are known

RGP-0072

to the PTO at the time an office action is prepared is improper and subjects Applicants to unnecessary fees and delay that could result in the loss of patent term. That is, Applicants have apparently been deprived of a timely opportunity to respond to all currently known prior art references that the PTO feels are relevant to independent claim 1. The Undersigned apologizes in advance if another meaning was intended by the PTO and looks forward to the PTO's clarification.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-6, 8-13, and 15-89 have been rejected under 35 U.S.C. § 103(a) as obvious over Fronk et al. (6,372,376), hereinafter "Fronk", in view of Ledjeff et al. (5,733,678), hereinafter "Ledjeff" and Landi et al. (5,223,568), hereinafter "Landi".

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143.

Applicant appreciates the PTO's detailed comments but must respectfully disagree. In particular, the cited combination fails to provide a prima facie case of obviousness with respect to independent claims 1, 11, 17, 40, 61, 62, 63, 76, 77 and 90 for the various reasons set forth below with respect to the individual claims.

The Examiner has stated that Fronk discloses, teaches and suggests a structure comprising at least two different kinds of materials being next to or substantially next to each other. (See Office Action, page 4, paragraph 3). With respect to Applicants' limitation of a "heat transfer area extending beyond the active area", the PTO states:

Please see Fronk et al at Figure 1, plate "8", especially at the outer portions of "20" and "22", figure 2, especially at the outer portions of "20" and "22", figure 2, especially at the outer portions of "64", "66", "72", "74", "80", and "82". ...The law requires that applicants must provide an evidence to the contrary for an inherent property (or close to it) of a material for the patentability of the claims as clearly stated out and set forth in

RCGP-0072

paragraph V above.

(Office Action of July 9, 2004, pages 5 & 6)

Applicants appreciate the detailed basis of rejection but must respectfully disagree. As noted above, the PTO has ignored the structural limitations of Applicants' independent claims and may be attempting to rely on inherency to satisfy its burden to provide a prima facie case of obviousness.

It will be shown that each independent claim is nonobvious over the cited combination of references.

Rejection of Independent Claims 1 and 11.

The cited combination of references fails to provide a prima facie case of obviousness with respect to the inventions of independent claims 1 and 11 because it fails to provide all of the necessary claim limitations and/or to provide a motivation to modify the reference(s) or to combine reference teachings.

Amended independent claims 1 and 11 respectively disclose an apparatus and a system that require a particular support having a particular core and a particular polymeric composite. The core must have an active area and a heat transfer area that extends beyond the active area. The polymeric composite must substantially cover the active area but not the heat transfer area.

The cited combination of Fronk in view of Ledjeff and Landi fails to disclose a particular support having a particular core and a particular polymeric composite wherein the core must have an active area and a heat transfer area that extends beyond the active area and the polymeric composite must substantially cover the active area but not the heat transfer area. Nor does the cited combination provide any motivation to modify any of the disclosures of the cited references so as to obtain Applicants' required apparatus or system.

The above noted portions of Fronk relied upon by the PTO ignore Fronk's express teachings as to the location of Fronk's protective coating 94. For example, in col. 4, lines 46-53, Fronk teaches that the first exterior sheet 58 and first working face 59 of the bipolar plate 56 of Figures 2 and 3 is covered with a protective coating 94. As illustrated in Figure 4, the

RCIP-0072

protective coating 94 is depicted with a black and white notched protective layer. This black and white layer is used in Figures 3 and 4 to illustrate Fronk's teaching that protective coating 94 extends to cover the first sheet 58 as well as the first working face 59. Moreover, a review of Figure 2 and Fronk's teachings at col. 3, lines 59-67 and col. 4, lines 1-25 indicates that the first exterior metal sheet 58 includes all of the elements 64, 66, 72, and 74.

Thus, the combination of Fronk's Figures 2, 3, and 4, shows that Fronk's protective coating 94 covers all of the 'active area' of Fronk's bipolar plate 56. It is also noted that elements 80 and 82 relied upon by the PTO are on the internal face 61 of second exterior sheet 60 that is not an active area as that term is defined by Applicants on page 6 of Applicants' Specification. Thus, nothing in Fronk teaches that any portion of first sheet 58 should be uncovered with respect to protective coating 94. Rather, Fronk teaches that both the active area and any heat transfer area of a conductive core of a support should be covered in a protective coating 94. Fronk therefore fails to disclose or suggest a core that has *both* an active area substantially covered with a particular polymer composite and a heat transfer area that extends beyond the polymeric covered active area but which not covered by the polymeric composite.

Both Ledjeff and Landi fail to rectify the deficiencies of Fronk as to the limitations of Applicants' amended independent claims 1 and 11.

Ledjeff et al. discloses a fuel cell wherein all of the components are made of a thermoplastic basic polymer, with the polymer being modified for particular components. Nothing in Ledjeff discloses a structure such as that required in Applicants' independent claims 1 or 11. That is, nothing in Ledjeff discloses or suggests a fuel cell having a conductive core having at least one particular portion covered with a polymeric composite and a different portion of that same core not covered with the polymeric composite.

Indeed, it is respectfully submitted that Ledjeff's entire teachings are directed away from the inventions of Applicants' independent claims 1 and 11. Ledjeff's invention is directed toward the production of bipolar plates made of a single thermoplastic base polymer so as to eliminate the need for a polymeric composite that protects a conductive core. One of skill in the art reading Ledjeff would be directed away from a conductive core having an active area requiring substantial covering by a polymeric composite. A reference that leads one of ordinary

RGP-0072

skill in the art away from the claimed invention cannot render it unpatentably obvious. *Dow Chem. Co. v. American Cyanamid Co.* 2 U.S.P.Q.2d 1350 (Fed. Cir. 1987).

Landi discloses a process for forming hard shaped molded articles of cross-linked liquid polybutadiene or polyisoprene resin and butadiene or isoprene containing solid polymer. Nothing in Landi discloses or suggests an apparatus or system having a particular conductive core having at least one particular portion covered with a polymeric composite and a different portion of that same core not covered with the polymeric composite.

Thus, taken as a whole, the inventions of Applicants' amended independent claims 1 and 11 are nonobvious over the cited combination because the cited combination fails to disclose or suggest all of the required claim limitations. Accordingly, reconsideration and removal of the rejection as to amended independent claims 1 and 11 is respectfully requested.

Rejection of Independent Claims 17, 40, 61, and 62.

Independent claim 17 sets forth an apparatus while independent claims 40, 61, and 62 set forth electrochemical cell components.

In each case, the recited invention requires a particular core and a particular polymeric composite. The core must have an active area and a heat transfer area that extends beyond the active area. The polymeric composite must substantially cover the active area of the core but not the heat transfer area. In addition, the polymeric composite must be adhered to active area by an adhesion promoter.

The foregoing remarks with respect to the rejection of independent claims 1 and 11 are hereby incorporated by reference.

None of the three references relied upon by the Examiner disclose or suggest a polymeric composite adhered to the active area of a conductive core by an adhesion promoter.

The disclosure of glue in Ledjeff does not suggest the use of an adhesion promoter because the glue in Ledjeff is used only to bond together different fuel cell components made of the same base polymer. This contrasts with Applicants' claimed invention which requires a

RGP-0072

conductive core having both an active area and a heat transfer area extending beyond the active area of the core wherein only the active area is covered by a polymeric composite adhered via an adhesion promoter. Ledjeff does not disclose or suggest such a construction. Support for a position to the contrary is respectfully requested.

Notwithstanding such differences, it is also noted that Applicants' dependent claims 23, and 45 require a metallic conductive core. Since Ledjeff is limited to polymeric components, Ledjeff cannot disclose or suggest the inventions of dependent claims 23 and 45.

It is therefore respectfully submitted that the inventions of independent claims 17, 40, 61, and 62 are nonobvious over the cited combination because the cited combination fails to provide a prima facie case of obviousness. In particular, the cited combination fails to disclose or suggest apparatus or electrochemical cell components having Applicants' particularly required construction of a conductive core having both an active area and a heat transfer area extending beyond the active area of the core wherein only the active area is covered by a polymeric composite adhered via an adhesion promoter.

Independent claims 40 and 61 are additionally defined by functional limitations.

For example, independent claim 40 further characterizes the claimed electrochemical cell component by requiring it to have a volume resistivity of 0.116 or less. However, nothing in the cited combination of references indicates that this is a desirable volume resistivity for an electrochemical cell component having Applicants' required construction. Indeed, in view of the foregoing differences noted above, it is respectfully submitted that nothing in the cited combination would lead one of skill in the art to believe that an electrochemical cell having Applicants' required construction would even be capable of such a volume resistivity. Obviousness cannot be predicated on what is unknown. *In re Spormann*, 150 U.S.P.Q. 449, 452 (C.C.P.A. 1966).

Similarly, independent claim 61 requires the polymeric composite have a linear shrinkage per unit length in the X-Y plane of less than or equal to about 0.0005. Nothing in any of the cited references suggests that linear shrinkage is of concern in the selection of a polymer composite for use in an electrochemical cell component. In the absence of such a suggestion,

RCIP-0072

Applicants' required functional limitation is unknown from a review of the cited combination of references. The mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency. *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981).

It is respectfully submitted that the functional limitations of independent claims 40 and 61 additionally distinguish over the recited combination of references to the extent that the combination fails to provide a prima facie case of obviousness.

Rejection of Independent Claims 63 and 76.

Independent claim 63 sets forth an electrochemical cell component while independent claim 76 discloses a method of making an electrochemical cell component.

The cell component of independent claim 63 is similar to independent claims 1 and 11 but additionally requires that the polymeric composite substantially covering the active area have a channel. Thus, the invention of claim 63 requires a particular core and a particular polymeric composite. The core must have an active area and a heat transfer area that extends beyond the active area. The polymeric composite must substantially cover the active area of the core but not the heat transfer area. In addition, the polymeric composite must have a channel.

Claim 76 requires that a particular polymeric composite be molded onto a particular conductive core.

The foregoing remarks with respect to the rejection of independent claims 1 and 11 are hereby incorporated by reference.

In addition, it is noted that Fronk teaches that protective coating 94 can be applied by electrophoretic deposition, brushing, spraying, spreading, or laminating. See Fronk, col. 5, lines 21-23. Ledjeff teaches that the various polymeric components of the fuel cell be glued or welded together or combined with pressure. See Ledjeff, col. 6, lines 53-67.

Also, nothing in any of the cited references discloses a channel in a component that would suggestiveness of Applicants' polymeric composite. The PTO is again invited to provide support for any position to the contrary.



RGP-0072

Thus, neither reference discloses or suggests molding a polymeric composite to a conductive core in the making of an electrochemical cell component or for molding a channel into the particular electrochemical cell component having the particularly structured molded polymeric composite. The PTO is respectfully asked to provide detailed support for any position to the contrary.

Accordingly, it is respectfully suggested that the cited combination of references fails to provide a prima facie case of obviousness with respect to the inventions of independent claims 63 and 76. Reconsideration and removal of the rejection as to these claims is respectfully requested.

Rejection of Independent Claim 77.

Independent claim 77 sets forth an electrochemical cell that requires a conductive core and a particular polymeric composite. The core must have an active area and a heat transfer area that extends beyond the active area. The polymeric composite must substantially cover a first side of the active area of the core and must have a channel that is non-conformal to the underlying active area.

The foregoing remarks with respect to the rejection of independent claims 1 and 11 are hereby incorporated by reference.

Applicants have reviewed the cited combination of references but have failed to arrive at the PTO's basis of rejection for the invention of independent claim 77. The PTO is respectfully requested to provide support for the rejection.

Conclusion

It is therefore respectfully submitted that the inventions of Applicants' pending independent claims are nonobvious over the cited combination because the cited combination fails to disclose or suggest all of the required claim limitations.

Similarly, in as much as all of the pending dependent claims incorporate the limitations of at least one independent claim, they are likewise submitted to be patentable and nonobvious

RGP-0072

over the cited combination. Accordingly, reconsideration and removal of the rejection as to all pending claims is respectfully requested.

It is respectfully submitted that the foregoing amendments and remarks fully comply with the Office Action and that the pending claims are now in a condition suitable for a Notice of Allowance. Accordingly, a Notice of Allowance is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,  
CANTOR COLBURN LLP  
Applicants' Attorneys

By 

Mary E. Golota

Registration No. 36,814

Telephone: (248) 524-2300

Leah M. Reimer

Registration No. 39,341

Telephone: (860) 286-2929

Date: October 12, 2004  
Customer No.: 23,413